



06-25-03

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TC 1700

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Christine McBride et al.

Docket: CER-296

Serial No. 10/023,671 ✓

Group Art Unit: 1761

Filed: December 18, 2001

Examiner: WONG, LESLIE A

For: FLAVOR STABILIZATION IN FOODS

600 Third Avenue
New York, NY 10016
June 24, 2003

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

SIR:

This is in response to an Office Action dated March 26, 2003 with respect to the above-identified case. Following the new format, attached hereto, starting on separate sheets, are amendments to the specification, amendments to the claims, and remarks.

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I hereby certify that this paper or fee is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" above and is addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450
D. Stokely

Amendments to the Specification:

Please amend the specification as follows:

Page 3, paragraph 4:

a¹ ~~mm~~ Suitably, ~~±~~ the prepared food is a frozen prepared food or a microwavable prepared food. The method of the present invention also protects the flavor during repeated freezing and thawing. ~~mm~~

Page 6, first full paragraph:

a² ~~mm~~ FIGS. 1-5 illustrates the results from testing a ~~raspberry~~ glaze reported in the Examples. ~~mm~~

Page 16, last full paragraph:

a³ ~~mm~~ The panelists were asked to rate the samples for raspberry flavor intensity, rank the flavors as to which had the most, middle or least flavor and to rate the flavor for preference. Using the same 1 to 10 scale as used in the previous rating test, with 10 being the best, the average results of the ratings were 5.15 for GCD, 4.59 for maltodextrin and 4.57 for gum arabic as shown in FIG. 2. ~~mm~~

Pages 20-21:

a⁴ ~~mm~~ The panelists were tested in a triangle test and results showed, with at least a 99% confidence, a difference between cyclodextrins complexed flavored samples and the non-protected

plated flavor samples. A 95% confidence level that there is a difference between the cyclodextrin encapsulated flavored sample and the gum arabic encapsulated flavored samples. Samples were evaluated for onion flavor intensity. The results, rated on a scale of 1 to 10, with 10 being the highest, showed the onion flavor complexed with beta cyclodextrin was rated at 6.68 compared to the gum arabic sample at 6.10 and 3.69 of the unprotected flavor plated on a maltodextrin. These results are presented in FIG. 3. Again, cyclodextrin was shown to protect onion flavor in microwaved food application with at least a 95% confidence level. These results are the average of the individual results. *um*

Page 21, last paragraph:

a^s ~~um~~The results show that onion oil, complexed with cyclodextrins, is better protected than those encapsulated with gum arabic in microwaved food applications and is considered to have a better flavor than flavor encapsulated with gum arabic. The panelists preferences were 43% for BCD, 33% for gum arabic, 14% for maltodextrin and 10% had no preference, as shown in FIG. 4. *um*

Page 22, last paragraph:

a^e ~~um~~As before, the panelists evaluated the samples in a triangle test that demonstrated, with a 99.9% confidence, that a difference existed between cyclodextrin complexed flavor and the plated

flavor. Triangle tested with at least a 95% confidence level indicated there was a difference between the cyclodextrin complex flavor and the gum arabic encapsulated flavor. The panelists were then asked to rate the samples as to onion flavor intensity. The results showed the onion flavor encapsulated with beta cyclodextrin to rate at 6.45 compared to the gum arabic sample at 5.93 and 2.9 of the unprotected flavor plated on a maltodextrin as shown in FIG. 5. In this case, after only one day in freezer storage, cyclodextrin was shown to protect onion flavor in frozen food applications, better than onion oil encapsulated by gum arabic or maltodextrin in frozen products. ~~MM~~

Amendments to the Claims:

Claims 1-5 (cancelled)

6. (currently amended): A method for stabilizing flavor in a prepared frozen food from repeated freezing and thawing and long term frozen storage comprising:

encapsulating a flavor with a cyclodextrin;

recovering the encapsulated flavor; and

a¹
adding the encapsulated flavor to a frozen food during preparation so as to stabilize said flavor from repeated freezing and thawing and long term frozen storage.

7. (original): The method of claim 6 wherein said cyclodextrin is an alpha, beta or gamma cyclodextrin or a modified alpha, beta or gamma cyclodextrin.

8. (currently amended): A method for stabilizing flavor in a prepared microwavable food after microwave cooking comprising:

encapsulating a flavor with a cyclodextrin;

recovering the encapsulated flavor; and

adding the encapsulated flavor to a microwavable food during preparation so as to stabilize the flavor after said food has been subject to microwave cooking.

9. (original): The method of claim 8 wherein said cyclodextrin is an alpha, beta or gamma cyclodextrin or a modified alpha, beta or gamma cyclodextrin.

REMARKS

Applicants have carefully considered the matters raised by the Examiner in the outstanding Office Action but remain of the opinion that patentable subject matter is present. Applicants respectfully request reconsideration of the Examiner's position based on the above amendments to the claims and the following remarks.

Claims 1-9 had been examined and this amendment cancels claims 1-5 while amending claims 6 and 8. No additional claims have been added.

One of the novel features of the present invention is the discovery that encapsulating a flavoring with a cyclodextrin and then using that encapsulated flavor in the frozen food results in stabilizing that flavoring against repeated freeze-thaw cycles and for long term frozen storage. Claim 6 has been amended herein to particularly point out and distinctly claim this aspect of the present invention. Support for these amendments to claim 6 can be found in the second full paragraph on page 2 wherein it states that encapsulating the flavoring with cyclodextrin provides stability during frozen food storage and in the fourth paragraph on page 3 where it states that the encapsulated flavoring is protected during repeated freeze-thaw cycles. The examples in the application also support the fact that the flavor encapsulated by cyclodextrin is

stabilized against both repeated freeze-thaw cycles and for long term frozen food storage. For example, on page 18, the Table illustrates that the flavor intensity of the cyclcodextrin encapsulated flavor showed appreciably little change over a long term storage of 4 days. The same was also shown in the Table on page 19 where it illustrates that the preference from the flavor panel was for the flavor encapsulated with cyclodextrin rather than conventional flavor stabilizers. The Table on page 18 also illustrates the fact that from repeated freeze-thaw cycles the flavor encapsulated with cyclodextrin provided a higher degree of stability than other conventional stabilizers since the raspberry glaze was subject to two freeze-thaw cycles, the second one being after it was thawed after 4 days of storage.

One of the other novel aspects of the present invention is the discovery that flavor encapsulated with cyclodextrin stabilizes the flavor even during microwave cooking. Claim 8 has been amended herein to particularly point out and distinctly claim this aspect of the present invention. Support for this aspect can be found on page 2, second full paragraph, as well as in the examples. Specifically, in the example, preparation of the raspberry glaze and the gravy, see page 8 (A2.3) and page 11 (C3.4) wherein it discloses microwaving the raspberry glaze and the gravy. As reported in the paragraph bridging pages 13 and 14, the raspberry

glaze was considered to be the highest rating with respect to flavor by the panelists as well as in the first full paragraph on page 14. Additionally, the last paragraph on page 16 and the first full paragraph on page 17 bring out the raspberry flavor has been subject to microwave cooking encapsulated with cyclodextrin. With respect to the onion gravy, these results are reported in the paragraphs on pages 20 and 21 and it can be seen that beta cyclodextrin ranked higher than other conventional stabilizers.

It is respectfully submitted that none of the references cited by the Examiner neither teaches nor suggests either the long term frozen storage stability and the repeated freeze-thaw stability provided by the method of the present invention nor the stability provided by the present invention from microwave cooking.

Claims 1-9 had been rejected as being unpatentable over a combination of Anonymous, Furata, and Reineccius. Each of these references demonstrate that flavors can be encapsulated with a cyclodextrin. None of them, however, teach nor suggest a method for stabilizing flavor from repeated freeze-thaw cycles, long term frozen storage, or microwave cooking. Freezing and thawing and microwave cooking subjects the food to wet and harsh conditions which are known to have deleterious effects on flavoring. Typically, it was known that cyclodextrins release their flavors

with the addition of water or wet and humid environments. Applicants discovered, quite surprisingly, that in both frozen foods and microwave cooking, the cyclodextrins stabilize the flavoring to a greater degree than conventional flavor stabilizers. A long term storage of cyclodextrin complexes especially flavors complexed with cyclodextrins was not known. In fact, as reported in the reference Furata, humidity caused the release or loss of the flavor.

None of the references teach or suggest the fact that the flavor in a frozen food or microwave food can be stabilized by encapsulating the cyclodextrin. Such encapsulated flavor stabilized against repeated freeze-thaw cycles and long term frozen storage for microwave cooking. Respectfully, this amendment to the claims as presented herein are patentable over the cited references taken alone or in combination.

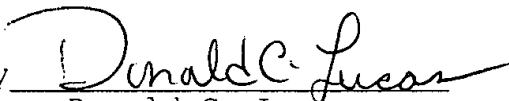
In reviewing the application, certain errors were noted. Specifically, it was noted that although FIGS. 1-5 were filed with the application, no reference was made to these specific figures in the examples. Amendments have been made herein to marry up the figures with the examples.

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance and such action is respectfully requested. Should any fees or extensions of time be necessary in order to maintain this application in pending condition, appropriate requests are hereby made and authorization given to debit account #02-2275.

Respectfully submitted,

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